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Effects of high and low breast support on breast kinematics and kinetics during treadmill running

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Abstract

Results: The mean vertical component of the peak bra/breast spring force during treadmill running was greatest during the downward breast trajectory and was approximately 30% less in the high breast support condition (13 N ± 7 N) compared to the low support condition (17 N ± 10 N). This force reduction was accompanied by a 300% decrease in breast and bra discomfort. Conclusion: Wearing a well-fitted supportive sports bra is recommended for females with large breasts to reduce the breast forces and, in tum, exercise induced breast and bra discomfort during physical activity such as treadmill running.

Keywords

breast, running, support, low, high, kinematics, kinetics, effects, during, treadmill

Disciplines

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Effects of high and low breast support on breast kinematics and kinetics during treadmill running

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Introduction: To reduce breast movement and exercise induced breast discomfort during physical activity, sports bras must restrain the breast forces generated during this activity. As exercise induced breast discomfort is a barrier to women participating in physical activity and, in turn, enjoying the secondary health benefits of exercising, designing effective breast support is essential. This study aimed to investigate the bra/breast spring forces generated during treadmill running and how these forces, and associated levels of exercise induced breast discomfort, were moderated by the level of breast support.

Methodology: Breast volume and kinematic data were collected for 20 large-breasted females who ran on a treadmill under a high and a low external breast support condition. Subjects ranked their bra fit comfort, exercise induced breast discomfort and perceived exertion immediately before and after running. The vertical component of the bra/breast spring force was derived from breast mass and instantaneous breast acceleration data, accounting for gravitational forces during the breast cycle.

Results: The mean vertical component of the peak bra/breast spring force during treadmill running was greatest during the downward breast trajectory and was approximately 30% less in the high breast support condition (13 N ± 7 N) compared to the low support condition (17 N ± 10 N). This force reduction was accompanied by a 300% decrease in breast and bra discomfort.

Conclusion: Wearing a well-fitted supportive sports bra is recommended for females with large breasts to reduce the breast forces and, in turn, exercise induced breast and bra discomfort during physical activity such as treadmill running.

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Relationships between bone parameters and physical health measures in independent-living Veterans

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Introduction: The extent to which preventive health strategies play a role in elderly Veterans' capacity to maintain functional independence is not yet entirely understood. Hence the purpose of the present study was to examine and quantify associations between descriptive, functional, and musculoskeletal parameters in elderly Australian war Veterans and their partners.

Methodology: Thirty males ($n = 15$) and females ($n = 15$) aged between 65 and 92 years were assessed for functional capacity with the six-minute walk test and the timed up and go test. Musculoskeletal parameters of the non-dominant distal lower-limb were obtained using peripheral quantitative computed tomography (pQCT). Descriptive characteristics, including physical activity were largely obtained from questionnaires.

Results/conclusion: Results indicated weekly physical activity and muscle cross-sectional area explained between 47 and 61% of the variance in selected measures of bone strength and area ($R^2 = 0.47$–0.61). Significantly greater bone area and strength were detected in males compared with females (mean = 41% greater in males). These results emphasize the high relevance of the muscle-bone unit in elderly Veterans, particularly females. The results also strengthen the evidence-base for preventive strategies, such as regular physical activity, rather than curative strategies to aid in maintaining functional independence in a population with proven vulnerability to chronic disease.

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A qualitative study of parental physical activity: Exploring the influence of social support and normative expectations

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Introduction: Parents of young children are a population at risk of being inactive. Social environmental factors are important determinants of physical activity (PA) behaviour and may affect PA related beliefs. The aim of the current study was to explore the influence of social support and normative expectations on PA related beliefs and behaviours among parents of young children.

Methods: The study recruited a community sample of adult parents of young children living in South East Queensland, Australia ($N = 40$). Semi-structured interviews, with group sizes ranging from one to four participants, were conducted. The interviews were audio taped and transformed to identify commonly occurring themes.

Results: The analysis shows social environments influence the PA habits of parents. Partners and family members were primary sources of instrumental support (e.g., child care) as they alleviated feelings of guilt. Emotional support (e.g., encouragement/criticism, companionship) and informational support (e.g., ideas, advice) were more often described as being sourced from friends, family, and neighbours. For some parents, reciprocal support and support for one's own perspective on being active were also considered important.